

Amendment B

Amendments to the Claims:

Please amend the claims, as indicated below.

Claim 1 (original). A fuser assembly, comprising:

a roller having a heat absorptive outer layer on an inner core of thermally isolating material; and

a radiant heating element positioned adjacent and external to said outer layer of said roller.

Claim 2 (original). The fuser assembly according to claim 1 wherein said outer layer comprises an interior metallic layer and an exterior release layer.

Claim 3 (original). The fuser assembly according to claim 1 wherein said outer layer comprises an inner metal layer and an outer elastomeric layer.

Claim 4 (previously amended). The fuser assembly according to claim 1 further comprising a temperature transducer configured to detect a surface temperature of said roller.

Claim 5 (previously amended). The fuser assembly according to claim 1 further comprising a heating element controller configured to operate said heating element in response to a temperature of said roller.

Claim 6 (original). The fuser assembly according to claim 5 wherein said controller is further responsive to a quantity of toner applied to a section of media corresponding to a section of said fuser roller heated by said heating element.

1 Claim 7 (original). The fuser assembly according to claim 1 wherein said radiant heating
2 element comprises:

3 a heating array; and

4 a heat deflector disposed to direct at least a portion of heat radiated by said
5 heating array toward said roller.

6 Claim 8 (original). The fuser assembly according to claim 7 wherein said heat deflector
7 also directs at least a portion of heat radiated by said heating array toward a media to
8 thereby preheat said media prior to engaging said roller.

9 Claim 9 (previously amended). The fuser assembly according to claim 1 wherein said
10 outer layer has a thickness of between zero and three millimeters.

11 Claim 10. (original). The fuser assembly according to claim 1 wherein said roller
12 comprises a homogeneous construction of a selected material, said material formed to
13 have a nonporous skin forming said outer layer and a porous internal structure forming
14 said inner core.

15 Claim 11 (original). A fuser assembly according to claim 1 further comprising a thin layer
16 of release material covering the low thermal mass outer layer.

17 Claim 12 (original). The fusing assembly according to claim 1 further comprising a
18 media preheating element configured to radiationally heat said media prior to being
19 received by said roller.

20 Claim 13 (original). The fusing assembly according to claim 1 wherein said heating
21 element includes a plurality of longitudinally oriented heating arrays circumferentially
22 spaced along a periphery of said roller.

23 Claim 14 (original). The fusing assembly according to claim 12 including a controller
24 configured to detect a thermal property of said roller and, in response, dynamically
25 control said heating arrays, wherein said thermal property includes a differential
temperature measured on either side of a nip region of said roller.

1 Claim 15 (original). A heated fuser, comprising:

2 a fusing roller comprising low thermal mass outer layer surrounding a thermally
3 isolating core;

4 a pressure roller comprising an elastomeric outer layer, the pressure roller
5 disposed adjacent to the fusing roller; and

6 a radiant heating device disposed external to said fusing roller and configured to
7 heat said low thermal mass outer layer of said fusing roller to a desired operating
8 temperature.

9 Claim 16 (original). The heated fuser according to claim 15 wherein said outer layer
10 comprises an interior metal layer and an exterior release layer.

11 Claim 17 (original). The heated fuser according to claim 15 wherein said low thermal
12 mass outer layer comprises an interior metal layer and an exterior elastomeric layer.

13 Claim 18 (original). The heated fuser according to claim 15 wherein said radiant heating
14 device is further configured to heat a media prior to said media engaging said fusing
15 roller.

16 Claim 19 (currently amended). A method of fusing toner onto a media comprising ~~the~~
17 steps of:

18 heating a fusing roller using only radiant heat directed toward a surface of said
19 fusing roller; and

20 forming a nip region between said fusing roller and a pressure roller, wherein said
21 nip region has an infeed side and an outfeed side;

22 transporting the media into rolling contact with said fusing roller and through the
23 nip region to simultaneously heat said toner to a desired temperature and apply pressure
24 to the toner causing the toner to fuse to the media; and

25 detecting a temperature differential between said infeed side and said outfeed
side of said nip region.

1 Claim 20 (currently amended). The method according to claim 19 further comprising ~~the~~
2 ~~steps of:~~

3 applying the toner to the media;
4 radiationally preheating the toner on a portion of the media prior to said
5 transporting ~~step bringing said portion media~~ into rolling contact with said fusing roller.

6 Claim 21 (currently amended). The method according to claim 19 further comprising ~~the~~
7 ~~steps of:~~

8 ~~detecting a temperature of said fusing roller; and~~
9 ~~controlling said step of heating of said fusing roller in response to detecting said~~
10 ~~detected temperature differential.~~

11 Please add the following claims, as indicated below.

12 Claim 22 (new). The method according to claim 21 further comprising:

13 ascertaining an additional parameter; and
14 controlling heating of said fusing roller in response to ascertaining said additional
15 parameter.

16 Claim 23 (new). The method according to claim 22 wherein said additional parameter is
17 selected from the group comprising: heat energy required per unit weight of applied
18 toner; heat energy required per unit volume of applied toner; average density of toner to
19 be fused; maximum density of toner to be fused; media speed; heater efficiency;
20 ambient air temperature; and, ambient air humidity.

21 Claim 24 (new). The method of claim 19, further comprising detecting a media thickness
22 in response to detecting said temperature differential.

23 Claim 25 (new). The method of claim 19, further comprising heating said pressure roller
24 using only radiant heat directed toward a surface of said pressure roller.

25 Claim 26 (new). The fuser assembly according to claim 1 wherein said inner core is
substantially fabricated from a foamed material or a particulate material.

1 Claim 27 (new). The fuser assembly according to claim 1, wherein said inner core is
2 substantially fabricated from a material selected from the group comprising:
3 polyurethane; polystyrene; glass fibre; rubber; porcelain; mica; asbestos; cork; kapok;
4 and air.

5 Claim 28 (new). The fuser assembly according to claim 1 wherein said outer layer is
6 substantially fabricated from a material selected from the group comprising: aluminum;
7 stainless steel; copper; tungsten; metalized rubber; and ceramic.

8 Claim 29 (new). The fuser assembly according to claim 1 wherein said roller comprises
9 a skeletal inner structure.

10 Claim 30 (new). The fuser assembly according to claim 29 wherein said skeletal inner
11 structure defines at least one void that is configured to contain air.

12 Claim 31 (new). The fuser assembly according to claim 29 wherein said skeletal inner
13 structure comprises at least one rib radially extending from a central shaft region to an
14 outer cylindrical portion.

15 Claim 32 (new). The fuser assembly according to claim 29 wherein said skeletal inner
16 structure comprises at least one spoke radially extending from a central shaft region to
17 an outer cylindrical portion.

18 Claim 33 (new). The fuser assembly according to claim 13 wherein each of said plurality
19 of heating arrays is configured to be individually controllable.
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1 Claim 34 (new). The fuser assembly according to claim 1 further comprising a pair of
2 temperature sensors, wherein:

3 said fusing roller and said pressure roller together form a nip region that has an
infeed side and an opposite outfeed side;

4 one of said pair of temperature sensors is positioned proximate said fusing roller
5 and configured to detect a surface temperature thereof on said infeed side of said nip
6 region; and

7 another of said pair of temperature sensors is positioned proximate said fusing
8 roller and configured to detect a surface temperature thereof on said outfeed side of said
nip region.

9
10 Claim 35 (new). The fuser assembly according to claim 1 further comprising a pair of
temperature sensors, wherein:

11 said fusing roller and said pressure roller together form a nip region that has an
12 infeed side and an opposite outfeed side;

13 one of said pair of temperature sensors is positioned proximate said fusing roller
14 and configured to detect a surface temperature thereof on said infeed side of said nip
region; and

15 another of said pair of temperature sensors is positioned proximate said pressure
16 roller and configured to detect a surface temperature thereof on said outfeed side of said
17 nip region.

18 Claim 36 (new). The fuser assembly according to claim 1 further comprising a pair of
19 temperature sensors, wherein:

20 said fusing roller and said pressure roller together form a nip region that has an
21 infeed side and an opposite outfeed side;

22 one of said pair of temperature sensors is positioned proximate said pressure
23 roller and configured to detect a surface temperature thereof on said infeed side of said
nip region; and

24 another of said temperature sensors is positioned proximate said fusing roller and
25 configured to detect a surface temperature thereof on said outfeed side of said nip
region.

1 Claim 37 (new). The fuser assembly according to claim 1 further comprising a pair of
2 temperature sensors, wherein:

3 said fusing roller and said pressure roller together form a nip region that has an
infeed side and an opposite outfeed side;

4 one of said pair of temperature sensors is positioned proximate said pressure
5 roller and configured to detect a surface temperature thereof on the infeed side of said
6 nip region; and,

7 another of said pair of temperature sensors is positioned proximate said pressure
8 roller and configured to detect a surface temperature thereof on said outfeed side of said
nip region.

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10 Claim 38 (new). The fuser assembly according to claim 18 further comprising an
auxiliary media/toner preheat unit configured to heat said media.

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12 Claim 39 (new). The fuser assembly according to claim 18 wherein said radiant heating
13 device comprises a heat reflector that defines:

14 a main aperture configured to direct heat energy therethrough and toward said
fusing roller; and

15 and a second aperture configured to direct heat energy therethrough and toward
16 said media.

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18 Claim 40 (new). The fuser assembly according to claim 7 wherein said heat reflector is
substantially fabricated from a foam material.

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20 (End of Amendment B)

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